

In the Office of Engineering and	)	
Technology Technological Advisory	)	
Council (TAC) inquiry into	)	
	)	<b>FCC ET Docket No. 15-170</b>
Test sites for radiated emission	)	
measurements	)	

American National Standards Institute, Accredited Standards Committee C63® (“ASC C63”) hereby requests Commission permission to submit these late-filed comments in the above-captioned proceeding. In 2014, the Commission adopted ANSI C63.4-2014 into its Part 15 rules<sup>1</sup> as a referenced EMC measurement standard for unintentional radiators. In the First Report and Order in this docket, the Commission modified certain Part 15 rules in terms of how they reference this measurement standard.<sup>2</sup> On 15 September 2017, ASC C63 adopted ANSI C63.4a-2017 as an amendment to the ANSI C63.4-2014 and desires that any further Report and Order in this docket now include this amendment as part of the referenced standard. ASC C63 understands that while these comments are technically late-filed, they could not have been submitted in a timelier manner because the amendments were only recently adopted. Thus, good cause is shown for the

<sup>2</sup> See First Report and Order, June 22, 2017, In the Matter of Amendment of Parts 0, 1, 2, 15 and 18 of the Commission's Rules regarding Authorization of Radiofrequency Equipment.

Commission to grant ASC C63's request to include the ANSI C63.4a-2017 amendment into its Part 15 rules.

## **Introduction**

ASC C63 is the principal standards organization that is responsible for developing EMC measurement standards and testing procedures for use by the Commission and electronics manufacturers who desire to market their products in the United States. ASC C63 is comprised of over 30 members who serve voluntarily and represent a broad cross-section of equipment manufacturers, testing laboratories, trade associations, government agencies (including the FCC and FDA), laboratory accreditation bodies and independent EMC consultants. ASC C63 members provide technical input and training on product compliance standards for both government and industry.

For over 25 years, the Commission has referenced ASC C63 standards in its rules. The first ASC C63 standard, ANSI C63.4, used for measuring emissions from digital devices, was published in 1988 following a six-year review and revision of the Commission's original measurement procedure, MP4. The most recent edition of ANSI C63.4, published in 2014, was adopted by the Commission in ET Docket No. 13-44. As a result, ANSI C63.4-2014 is now widely used throughout the electronics industry for the EMC measurements required to establish compliance with Commission rules.

In 15 September 2017, ASC C63 adopted an amendment to ANSI C63.4, which has now been published as ANSI C63.4a-2017. The amendment was created for the purpose of resolving certain normalized site attenuation (NSA) issues, in particular, the problem of measuring EUTs that are greater than 2 meters in height, which is the maximum volumetric NSA measurement height permitted under ANSI C63.4-2014.

### **ANSI C63.4a-2017 Address Measurements of EUTs up to 3 Meters in Height**

ANSI C63.4-2014, *Clause D.3 (NSA for alternative test sites)* contains the following measurement restriction on equipment size:

For these sites, a “test volume” is defined as that volume traced out by the largest equipment or system to be tested as it is rotated about its center location through 360 degrees, such as by a turntable. In evaluating the site, the transmit antenna shall be placed at various points within the test volume with both horizontal and vertical polarization .... This may require a maximum of 20 separate site attenuation measurements ... for two polarizations (horizontal and vertical) and for two heights (1 m and 2 m, horizontal; 1 m and 1.5 m, vertical). The maximum height of the EUTs to be measured, above the reference ground plane, shall not exceed the height at which the volumetric measurements were performed. The maximum volumetric measurement height is to the upper tip of the antenna used in the vertical orientation or horizontal orientation when performing NSA.

This restriction, however, is often ignored in many cases for EUTs that greater than 2 meters in height. And, it is for this reason that ASC C63 developed an amendment to the standard to accommodate the measurement of EUTs up to 3 meters in height. This change is now set forth in ANSI C63.4a-2017, specifically *Clause D.3.3(a) (Measurement Geometries)* which states as follows:

For subsequent EUT radiated emission measurements, the maximum EUT height, relative to the reference ground plane, shall not exceed the height of the validated test volume. EXAMPLE—If the height of the test volume to be validated is 3 m, for an example site with 10 m measurement distance, the transmit antenna heights for horizontal polarization measurements are 1 m and 3 m (i.e., per Table D.3 or

Table D.5); for vertical polarization measurements the transmit antenna heights are 1 m and 2.5 m (i.e., per Table D.4 or Table D.6).

### **ANSI C63.4a-2017 Makes Other Changes to the Standard**

Additional changes made by ANSI C63.4a-2017 to Annex D of the standard consist of the following:

- Corrected the equation for calculating the measured NSA value [i.e., Equation (D.1) of ANSI C63.4-2014];
- Added text to clarify the single-position NSA geometry for validation of standard test sites, which previously was indicated mainly by the measurement setup figures and NSA tables;
- Added requirements for maximum frequency step size for both the discrete frequency method and the swept frequency method; also quantified the existing requirement for the receive antenna height scan rate for the swept frequency method;
- For the swept frequency method, added the requirement to report in tabular format those measured NSA values that are within 1 dB of the site acceptability criterion;
- Removed the provision from D.3 for moving the antenna inward from the periphery for the left and right positions in horizontal polarization;
- Added equations to be used for calculating theoretical NSA for an ideal site, which can be used for frequencies and/or geometries other than those listed in the tables;
- Expanded the tables of theoretical NSA for an ideal site by adding values for a 5 m measurement distance (for example, CISPR 32:2015 [B53] allows a 5 m measurement distance), a for greater transmit antenna heights (for validating test volumes taller than 2 m), and for the frequency increments specified in the measurement procedures sub-clauses (i.e., D.4 and D.5); and
- Updated the figures and added a top-view figure for vertical polarization [i.e., Figure D.3 b)], depicting the re-orientations of the transmit antenna and the receive antenna for the left and right positions of the transmit antenna a Numbers in brackets correspond to those of the bibliography in Annex O of ANSI C63.4-2014.

In addition to the foregoing, ANSI C63.4a-2017 updates various equations in Annex F, Annex G, and Annex N. Finally, the antenna to EUT separation distance value in Section 4.5 was also amended.

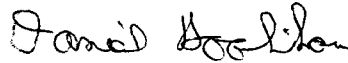
**The Part 15 Rules Should be updated to include the ANSI C63.4a-2017 Amendments**

ASC C63 submits that test laboratories that measure large systems for FCC compliance should use ANSI C63.4a-2017 in place of ANSI C63.4-2014 where the two standards overlap. To this end, the Commission is urged to update its Part 15 Rules to include the ANSI C63.4a-2017 amendments to ANSI C63.4-2014.

For the reasons set forth above, ASC C63 urges the Commission to accept these comments in this proceeding.

Respectfully submitted,

**American National Standards Institute  
Accredited Standards Committee C63®**



/s/ Mr. Daniel Hoolihan

Chairman,  
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